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ABSTRACT

This annotated bibliography addresses issues in the psychological assessment of traditionally underserved persons who are deaf. The bibliography was developed by means of an extensive search of research databases and a review of conference proceedings. References are presented alphabetically by author within each major section and include bibliographic information and substantial abstracts. Part I contains 27 abstracts of journal articles, books, monographs and chapters from edited works. These publications, spanning 35 years, address various aspects of the psychological evaluation of traditionally underserved (i.e., low functioning) persons who are deaf. Part II summarizes 38 additional journal articles, book chapters, and other sources of information on a variety of background factors relevant to the psychological assessment of traditionally underserved individuals with deafness. (DB)

The Psychological Assessment of Traditionally Underserved and Unserved Individuals with Deafness: An Annotated Bibliography of Research and Practice

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PSYCHOLOGICAL ASSESSMENT OF TRADITIONALLY UNDERSERVED AND UNSERVED INDIVIDUALS WITH DEAFNESS: AN ANNOTATED BIBLIOGRAPHY ON RESEARCH AND PRACTICE

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Foreword

With the increased attention currently being given to the delivery of services to traditionally underserved persons who are deaf, there is a corresponding interest in issues related to the psychological assessment of persons who are deaf and who function at a less-than-optimal level. The term *traditionally underserved* describes a population of persons who are deaf and who have been referred to previously as *low-achieving*, *lower achieving*, *lower functioning, hearing-impaired developmentally-delayed, developmentally disabled deaf, severely handicapped deaf,* and *disadvantaged deaf.* The individuals who are included in this definition are deaf and experience significant limitations in communication, academic, social and/or independent living skills to such an extent that they may be unable to function independently without considerable support services. This population tends to include a number of individuals who may have one or more disabilities in addition to deafness, may be a member of a minority group, may have been raised in a foreign language environment, and/or may be of lower socio-economic status. Obviously, comprehensive evaluation of these individuals is essential for the development of appropriate educational, rehabilitative, and mental health services. It is an unfortunate but frequent occurrence that traditionally underserved persons who are deaf are misdiagnosed or excluded from services based upon the results of inappropriate assessment measures or reports from clinicians insufficiently trained to evaluate this population. Although a wealth of literature exists related to the psychological assessment of persons who are deaf or hard of hearing, there is a critical dearth of information specifically focused upon the assessment of individuals who are deaf and who have been either unserved or underserved in education, rehabilitation, and mental health settings. The information that does exist is widely scattered and largely inaccessible to researchers and practitioners who wish to determine the state of the art in this field.

The impetus for this project came in the form of a need statement from Dr. Larry G. Stewart, a professor of psychology at Gallaudet University and a nationally-recognized expert of the rehabilitation and mental health needs of lower-achieving persons who are deaf. Dr. Stewart felt that the lack of access to information on the psychological assessment of this population was a serious obstacle for researchers and practitioners whose time could be better spent conducting research or implementing new procedures than attempting to track down prior research findings on this topic. As a result, Dr. Stewart approached the Research and Training Center on Traditionally Underserved Persons who are Deaf (NIU-RTC) at Northern Illinois University and proposed the collaborative development of an annotated bibliography of research and practices regarding the psychological assessment of this population. Dr. Stewart felt that the need for such a document was urgent given the significantly increased interest in the topic and evidenced by the increasing numbers of graduate students, practitioners, and researchers undertaking related investigations. He also felt that such a single-source document would be of benefit not only as a time-saving measure, but also as a means of assuring more accurate and comprehensive coverage of the topic in literature reviews. Dr. Stewart's vision of such a publication included not only information specific to the assessment of this population but also related research and writings on topics which influence assessment practices with traditionally underserved persons who are deaf.

In response, the project was jointly undertaken by the NIU-RTC and the Department of Psychology at Gallaudet University. An extensive search was made of research data bases, including ERIC (1966-1991), PsychLit Abstracts (1974-1991), Sociofile (1974-1991), the NIU-RTC National Clearinghouse of Information on the Rehabilitation of Traditionally Underserved Persons who are Deaf and the Gallaudet University Deafness Resource Collection, in addition to a review of written proceedings from relevant conference presentations at the state and national level and doctoral dissertation reports. Information was comprehensively researched through the vast collections of the Northern

Illinois University Founders Library and the collegiate Illinois Library Systems. As the reader will note, the number of articles identified related to this topic is disappointingly low. Among those sources which were identified, the number of empirically-based studies is even lower and many of the works were authored more than a decade ago. It is apparent that there is a critical need for further research on this topic as the identification and development of appropriate assessment measures is a critical precursor to addressing the needs of this population.

Regrettably, this project was not completed until after the untimely death of Dr. Stewart in 1992. It is the hope of the authors that this work fulfills Dr. Stewart's vision to address this void and it is to his memory that this bibliography is dedicated.

K.S., S.S., and S.O.

Table of Contents

PART I:
RESEARCH AND PRACTICE IN THE PSYCHOLOGICAL ASSESSMENT OF TRADITIONALLY UNDERSERVED PERSONS WHO ARE DEAF

Overview: This section contains abstracts of journal articles, books, monographs and chapters from edited works. These publications address various aspects of the psychological evaluation of traditionally underserved (i.e., low functioning) persons who are deaf. Spanning some 35 or more years, publications abstracted include journal articles, books/monographs, project reports, and book chapters.

Bindon, M.D. (1957). Rubella deaf children: A Rorschach study employing Munroe inspection technique. ***British Journal of Psychology, 48,*** **249-258.**

This study compared the personality patterns of hearing children, rubella deaf children, and children prelingually deafened by causes other than rubella through use of the Rorschach Technique. Subjects included three matched groups of 15-year old children. All deafsubjects attended an oral residential school for the deaf in New Zealand. The Rorschach Inkblots test was administered using verbal instructions, although subjects were free to respond through any combination of speech, sign communication, drawing, and writing. Quantitative and qualitative results from both deaf groups were similar, indicating that the cause of deafness was not a factor in test performance. Comparisons between the deaf subjects (rubella and nonrubella) and hearing subjects demonstrated great differences in test performance. An analysis of the deaf subjects' conceptual responses suggested that they were functioning on a less mature level of personality integration than their hearing peers. The author contended that this slowed personality maturation was relatively permanent and was not so much due to deafness per se as to its consequences, which included delays in language development and in the process of socialization.

This study was completed prior to the 1963-65 rubella epidemic in this country. Consequently, the results may not be as representative of today's rubella-deafened children and adults.

Bullis, M.D., & Marut, P.A. (1986). Evaluation recommendations and rehabilitation outcomes. In L.G. Stewart (Ed), ***Clinical rehabilitation assessment and hearing impairment: A guide to quality assurance*** **(pp. 111–118). Silver Spring, MD: National Association of the Deaf.**

This study asked three questions: (1) To what extent are vocational evaluation recommendations actually implemented; (2) What is the relationship of vocational evaluation recommendations that are followed to actual employment outcomes; and (3) What is the relationship of specific categories of implemented vocational evaluation outcomes? Subjects included 99 clients of a comprehensive services facility and 105 from a residential school for the deaf. Results indicated that evaluators tended to overestimate the level of adherence to recommendations. In addition, it was found that, as the percentage of vocational evaluation recommendations that were followed increased, a stronger relationship existed with employment outcomes. Finally, there was only weak congruence found between the type of recommendations that was made and the employment outcome.

Burnett, L.M. & Burnett, D.W. (1980). A correlation study of the Bender Visual Motor Gestalt and the Hiskey-Nebraska Test of Learning Aptitude and use with hearing handicapped students. *Volta Review, 82,* 483-485.

This study was based on the need to examine additional sources of academic difficulty that are not explained by hearing impairment, such as brain damage, learning disability, and mental retardation. This study attempted to correlate scores from the Bender Visual Motor Gestalt Test with scores from the Hiskey-Nebraska Test of Learning Aptitude (HNTLA). This was based on the rationale that the HNTLA was designed for use with hearing-impaired children and has been considered a more appropriate measure of cognitive functioning than other available intellectual measures.

Subjects included 15 students ranging in age from seven to 16 years who attended public school in a self-contained classroom for hearing-impaired individuals. An analysis of the data revealed that the correlation between the Bender Visual Motor Gestalt Test and the HNTLA did not reach statistical significance at the $p<.05$ level. The authors concluded that the Bender Visual Motor Gestalt Test should not be used as a screening measure of cognitive functioning for hearing-impaired children.

Critchfield, A.B. (1986). Psychometric assessment. In L.G. Stewart (Ed), *Clinical rehabilitation assessment and hearing impairment: A guide to quality assurance* (pp. 1–8). Silver Spring, MD: National Association of the Deaf.

The author of this chapter described the nature and process of psychometric assessment with persons who are deaf. Special attention was given to the components of such an assessment procedure with this population. Readers were assisted in developing the skills to ascertain the quality of the assessment reports they receive.

Fewell, R.R., & Rich, J.S. (1987). Play assessment as a procedure for examining cognitive, communication, and social skills in multihandicapped children. *Journal of Psychoeducational Assessment, 2,* 107-118.

This study was undertaken to explore the usefulness of an experimental procedure for examining play in handicapped children and to examine the relationship between the Play Assessment Scale (PAS) and measures of cognition, language, and social behavior. The study was based on the assumption that symbolic play is closely related to cognition and communication and that it can be used to discern information about developing skills. Construct validity of the PAS was also examined through a comparison with tests that were previously identified as useful for assessing particular traits. Subjects included 17 deaf-blind children (nine females, eight males) aged three to ten years. Sixteen of the subjects had dual sensory impairment that were moderate to severe in nature, and one subject was diagnosed with Usher's Syndrome but was not yet visually impaired.

The following measures were used to assess the domains of play, communication, cognition, and social development: (a) the Play Assessment Scale; (b) the Callier Azusa Scale; (c) the Early Intervention Developmental Profile; (d) the Gestural Approach to Thought and Expression; (e) the Learning Through Play Checklist; (f) the Wisconsin Behavior Rating Scale; and (g) the Wisconsin Behavior Rating Scale - Revised. All children were evaluated during a three-month period. Data collected in the classroom, in therapy, and in assessment session were used in the study. The results across all measurements suggested high positive relationships among play, communication, cognition

and social behavior which indicated that children's play development was consistent with their development in other domains. Advantages and limitations of the PAS for use as a measure of skill development were included in the report, and the authors indicated an optimistic outlook for the use of play assessment for gathering developmental information on young multihandicapped children.

Figueroa, R.A., Delgado, G.L. & Ruiz, N.T. (1984). Assessment of Hispanic children: Implications for Hispanic hearing-impaired children. In G.L. Delgado (Ed.), *The Hispanic Deaf: Issues & Challenges for Bilingual Education*. (pp. 124-152). Washington, DC: Gallaudet College Press.

Due to the paucity of information available on assessment of Hispanic deaf children, the authors reported on advancements in assessment of Hispanic hearing children, and then proposed guidelines for use of these assessment measures with Hispanic deaf children. Attention was given to the development of the System of Multicultural Pluralistic Assessment (SOMPA) Estimated Learning Potential, a comprehensive test battery specifically designed for nonbiased testing of culturally diverse children. The Adaptive Behavior Inventory for Children (ABIC) was also discussed,which the authors suggest may provide greater sensitivity to audiological problems and home language background, although they also acknowledge the need for further research ion the use of adaptive behavior measures for children who are deaf and Hispanic.

The proposed guidelines favored completing an in-depth case study of an individual rather than relying on unvalidated psychometric instruments and procedures. Emphasis was placed on the consideration of bilingual communicative competence of the examiner and observational study of the child in the home, neighborhood, and school environments. The following assessment sequence was suggested when testing Hispanic hearing-impaired/ limited English proficient children: determine the degree of hearing loss; determine the primary language ysed by the child; measure English/Spanish language proficiency; examine the child's background and transcultural experiences; determine the child's cross-cultural capabilities, which requires assessment of the individual's functioning in the home and school environments; and develop language appropriate interventions.

The authors included a list of the most commonly used tests with hearing-impaired individuals in the U.S. and their Spanish language test equivalents. Finally, the authors stressed the examiner's language and communication skills, as well as his/her cross-cultural skills as the most critical elements in an appropriate assessment of Hispanic hearing-impaired children.

Gerber, B.M. (1986). Psychiatric assessment. In L.G. Stewart (Ed), *Clinical rehabilitation assessment and hearing impairment: A guide to quality assurance* (pp. 87–94). Silver Spring, MD: National Association of the Deaf.

This book chapter described the use of psychiatry in the evaluation of deaf rehabilitation clients. Tcpics addressed include the psychiatric assessment referral and the psychiatric evaluation, and a sample report was provided. A special section was included that described the special considerations for psychiatric evaluation with this population including factors relating to the person being tested and factors related to the evaluator.

Hurley, O., Hirshoren, A., Hunt, J.T., & Kavale, K. (1979). Predictive validity of two mental ability tests with black deaf children. *The Journal of Negro Education, 48*, 14-19.

This study compared the relative effectiveness of the Wechsler Intelligence Scale for Children (WISC-R) Performance Scale and the Hiskey-Nebraska Test of Learning Aptitude (HNTLA) as a predictor of school achievement for children. Subjects included 59 prelingually deafened children from 99 to 156 months of age attending a total communication day school program for deaf children. Among this sample were 36 white children (24 boys, 12 girls) and 23 black children (11 boys, 12 girls). The tests were administered on different days by different examiners. Test scores used in the analysis included the WISC-R Performance IQ, the HNTLA Learning Quotient, grade scores for each of the seven achievement areas tested from the Stanford Achievement Test (SAT), and the average achievement grade scores from the SAT.

The results revealed that WISC-R Performance IQ scores correlated significantly only with SAT Arithmetic Concepts scores for white children. For black children, the WISC-R Performance IQ scores were significantly related to all achievement variables except SAT Arithmetic Computation and Language. A similar pattern was found for the HNTLA Learning Quotient. A critical ratio of the scores after an r-to-z transformation of correlation coefficients revealed no significant black versus white differences in the correlation of intelligence test scores with achievement scores. Chi square tests performed on all variables demonstrated that while groups differed significantly in WISC-R Performance IQ and HNTLA Learning Quotient, they were equivalent on all achievement measures.

Based on the findings of this study, the authors suggested that these tests have little or no value for predicting the achievement levels of either white or black deaf children.

Katz, M.A., & Buchholz, E.S. (1984). Use of the LPAD for cognitive enrichment of a deaf child. *School Psychology Review, 13*, 99-106.

The purpose of this study was to assess the viability of adapting the Learning Potential Assessment Device (LPAD) and mediational strategies for use with deaf children based upon interventions developed by Feuerstein, Rand, and Hoffman (1979, 1980). The LPAD was previously used to assess achievement levels of retarded children who had normal hearing. This measure differed from traditional diagnostic approaches as the emphasis was placed on process rather than product. In the evaluation process, the examiner became engaged in teaching in order to determine the child's learning potential. Evaluative instruments were used as tasks in the teaching process, which then enabled the examiner to evaluate the effects of teaching. Children above the age of 12 years whose measured IQ fell within a range of scaled scores from 40 to 90 were thought to comprise the population most likely to benefit from LPAD procedures. The report included the case study of a 14-year-old deaf girl who had been labeled a "slow learner" based on results of standardized tests traditionally used in the assessment of deaf children.

The LPAD battery was administered through assessment and mediation for 30 hours over a six week period. Assessment instruments included the Organization of Dots task, the Numerical Progressions Test, Raven's Progressive Matrices, Stencil Designs, the Plateaux Test, the Complex Figure, and the Associated Recall task. The authors reportedly felt that the data gathering package provided a greater understanding of the subject's deficiencies, strengths and potentials.

The results suggested that the subject's potentials were largely unrecognized in previous evaluations and suggested that she had "above average" cognitive potential. As identification of specific deficiencies occurred through the evaluation process, prescriptive recommendations were made to minimize or reverse deficiencies.

The authors stated that the study appeared to support the notion that mediational deprivation was contributory or causally related to poor performance and implied that it was possible for the effects of mediational deprivation to be reversed. Although the authors were in support of use of the LPAD with deaf children, several criticisms of the evaluation were cited, including the excessive time needed to complete the test battery and the potential for effectiveness of the measure to be largely dependent upon a charismatic teaching style of the evaluator. Based upon results of this project, the authors encouraged fundamental changes in current evaluation and intervention practices.

Lehman, J.U., & Simmons, M.P. (1972). Comparison of rubella and nonrubella young deaf adults: Implications for learning. ***Journal of Speech and Hearing Research, 15,*** **734-742.**

In this study, 30 young adults (16 males, 19 females) aged 19-20 who were deaf as a result of rubella were compared to a matched group of 30 nonrubella deaf young adults in a residential school for deaf children. The focus of the study was to detremine whether significant differences existed between these groups on a series of 25 measures, including: performance IQ, reading, language, arithmetic, speechreading and speech discrimination, visual retention, visual motor coordination, and degree of hearing loss. Deafness was the only disability noted for the nonrubella group, whereas 25 of the rubella subjects had one or more additional disability. The following standardized tests were administered to all subjects: Wechsler Adult Intelligence Scale (WAIS) Performance Scale; Revised Beta Examination; Form J of the Stanford Achievement Test; Benton Test of Visual Retention: Purdue Pegboard; and the Utley Lipreading Test.

The data were analyzed using a single-classification analysis of variance for each measure, and statistically significant differences were found on eight of the 25 measures, including language, reading, reasoning, computation, lipreading, and coding. In every case the performance of the nonrubella group was superior to that of the rubella group. However, no significant differences between groups were found in overall performance IQ, visual retention, manual dexterity, or degree of hearing loss. Further analysis of the findings on the reading, language, arithmetic, and lipreading tasks did not isolate any specific deficit but suggested a deficit in the integration of several underlying skills that are necessary requisites to a task. The authors suggested that there was a need to focus further efforts on the development and strengthening of cross-modal transfer and synthesis skills, rather than remediation of individual tasks.

Ouellette, S. (1988). The use of projective drawing techniques in the personality assessment of prelingually deafened young adults: A pilot study. ***American Annals of the Deaf, 133,*** **212-218.**

This pilot study assessed the validity and reliability of a projective personality measure for young deaf adults utilizing the House-Tree-Person (H-T-P) test. Subjects included 33 severely hearing-impaired young adults (18 male, 15 female) who were enrolled in a one-year transition work-study program at Northern Illinois University's Program for the Hearing Impaired. The program served low-achieving, technical-vocational, and college-bound students. Sixteen of the subjects were Caucasian and 13 were Black or Hispanic. Information was also obtained on the hearing status and occupation of subjects' parents. Subjects were asked to draw pictures of a person, a person of the opposite sex, a house, and a tree. Information collected during the administration included sequence of the drawings, the gender of the person drawn first, the part of the figure drawn first, and observations of the subjects' verbal and nonverbal behavior during the test.

Three psychologists who did not have access to clinical or demographic information on the subjects rated the drawings on scales measuring aggression, anxiety, insecurity, impulsivity, immaturity, egocentricity, dependency, and feelings of inadequacy. A comparison was made between the psychologists' ratings and those made by three counselors who worked with the students on a daily basis. Validity was established for five of the eight personality traits: aggression, impulsivity, immaturity, egocentricity, and dependency.

Analysis of the data revealed that the mother's employment was significantly correlated with aggression, impulsivity and immaturity; children of nonworking mothers tended to be rated "high" on the scales more often than children of mothers employed in either blue-collar or white-collar jobs. Although the results of the pilot investigation were promising, the author cautioned use of this measure with hearing-impaired persons until further and more extensive study was completed.

Plapinger, D., & Sikora, D. (1990). Diagnosing a learning disability in a hearing-impaired child: A case study. *American Annals of the Deaf, 135*, 285-292.

This report described a case study that utilized an interdisciplinary diagnostic approach to determine whether a nine-year-old, hearing-impaired child had a learning disability and if so, the type of disability. The assessment followed a procedure used to successfully identify learning disabilities in hearing-impaired children at the Diagnostic Classroom of the District Regional Assessment Center housed at the Child Development and Rehabilitation Center of the Oregon Health Sciences University. The diagnostic team included specialists in: pediatrics, audiology, psychology, speech-language pathology, special education, and physical and occupational therapy. The diagnostic battery assessed visual, auditory, and tactile perceptual skills, followed by processing and memory skills. The report listed each of the 29 evaluation tools used and how they were interpreted, noted those of greatest importance, and described the final recommendations of the diagnostic team.

The authors provided practical suggestions for replicating some of the procedures and evaluation measures in an educational setting. Emphasis was placed upon the need for inter-evaluator reliability through an interdisciplinary team approach when assessing learning disabilities in hearing-impaired children.

Powers, A., Elliot, R., Fairbank, D., & Monaghan, C. (1988). The dilemma of identifying learning disabled hearing-impaired students. *Volta Review, 90*, 209-218.

The purpose of this study was to compare comprehension and production of language, speech, sign language, learning disability, and behavior problem ratings of deaf students in order to determine if students with lower language ratings were more prone to being identified as learning disabled and/or to have a behavior problem.

Subjects included 27 students aged 5-12 attending a residential school for deaf children. All subjects were severely to profoundly hearing-impaired, had a low-average to above-average intelligence (range 80 - 131 on Performance Scale of the Wechsler Intelligence Scale for Children - Revised) and no visual problems. In the first phase of the study, ratings were obtained from each child's teacher, speech-language pathologist, school principal, and audiologist. In the second phase, these ratings were compared to subjects' scores on the Pupil Rating Scale Revised: Screening for Learning Disabilities and the Meadow-Kendall Social-Emotional Assessment Inventory for Hearing-Impaired Students.

In the initial phase of the study, seven of the 27 students were rated as having a learning disability by one or more of the raters, whereas in the final phase only three of the 27 students obtained scores on the Pupil Rating Scale that indicated a need for diagnostic testing for a possible learning disability. By contrast, only three of the 27 children were rated by one or more raters as having a behavior problem in the initial phase, whereas 11 of the 27 students obtained low scores on one or more of the sections of the Social-Emotional Assessment Inventory in the second phase of the study. All students rated as learning disabled or whose scores on the Pupil Rating Scale indicated a need for diagnostic testing obtained language ratings below the mean rating for students in the study. These results supported the idea that language that was atypical of hearing-impaired individuals in general was characteristic of a learning disability. Additionally, behavior problems, difficulty in attending to a task, poor organizational skills and difficulty retaining information were typical of the majority but not all learning disabled students. According to the authors, the results of the study did not support the notion that a discrepancy between achievement and potential was an effective indicator of a learning disability.

Shafqat, L.A. (1986). Innovations in assessment strategies: One approach. In L.G. Stewart (Ed), *Clinical rehabilitation assessment and hearing impairment: A guide to quality assurance* (pp. 119–123). Silver Spring, MD: National Association of the Deaf.

This study asked three questions: (1) To what extent are vocational evaluation recommendations actually implemented; (2) What is the relationship of vocational evaluation recommendations that are followed to actual employment outcomes; and (3) What is the relationship of specific categories of implemented vocational evaluation outcomes? Subjects included 99 clients of a comprehensive services facility and 105 from a residential school for the deaf. Results indicated that evaluators tended to overestimate the level of adherence to recommendations. In addition, it was found that, as the percentage of vocational evaluation recommendations that were followed increased, a stronger relationship existed with employment outcomes. Finally, there was only weak congruence found between the type of recommendations that was made and the employment outcome.

Shiels, J.W. (1986). Vocational assessment. In L.G. Stewart (Ed), *Clinical rehabilitation assessment and hearing impairment: A guide to quality assurance* (pp. 95–109). Silver Spring, MD: National Association of the Deaf.

This book chapter presented a perspective on vocational evaluation within the rehabilitation process with particular attention given to the assessment of deaf persons. A sample evaluation was included to illustrate many of the points discussed in the chapter.

Stewart, L.G. (1986). Psychological assessment: One perspective. In L.G. Stewart (Ed.), *Clinical rehabilitation assessment and hearing impairment: A guide to quality assurance* (pp. 9–25). Silver Spring, MD: National Association of the Deaf.

This publication offered a collection of chapters authored by specialists who dealt with specialized assessment approaches with hearing-impaired individuals in the rehabilitation process, including individuals with multiple disabilities and those who are severely handicapped. Individual chapters focused on psychometric assessment, psychological assessment from mental health as well as rehabilitation perspectives,

psychiatric assessment, neuropsychological assessment, forensic psychological assessment, and specialized vocational evaluation assessment. Special attention was given to the specific assessment needs of students in transition, innovations in assessment strategies, and the use of evaluation recommendations when providing rehabilitation services. Illustrative examples of each type of assessment report were provided in an effort to promote quality assurance practices through the comparison of existing reports with model reports.

Stewart, L.G. (Ed.). (1987). *Case studies in clinincal rehabilitation assessment and hearing impairment.* Silver Spring, MD: National Association of the Deaf.

A companion volume to the author's *Clinical Rehabilitation Assessment and Hearing Impairment: A Guide to Quality Assurance* (1986), this publication was intended for psychologists and other professional consumers of clinical assessment reports. The author included examples of both exemplary reports and those failing to meet the standards of core criteria. Topics remained consistent with the previous publication, including psychological assessment, psychiatric assessment, neuropsychological assessment, forensic psychological assessment, vocational evaluation, and psychological consultation reports.

This publication also offers chapters dealing with the foundations of quality assurance practices in clinical rehabilitation assessment, quality assurance safeguards for programs and service providers, guidelines for evaluating clinical rehabilitation assessment reports, and professional competency in the use of assessment reports throughout the rehabilitation process.

Stewart, L.G., & Pritchard, D.A. (1986). Forensic psychological assessment. In L.G. Stewart (Ed), *Clinical rehabilitation assessment and hearing impairment: A guide to quality assurance* (pp. 71–85). Silver Spring, MD: National Association of the Deaf.

This book chapter addressed the highly specialized field of forensic psychology, which concentrates on the use of psychological knowledge in answering specific legal questions. The initial sections of the chapter addressed the topic in general terms providing a solid framework for understanding the types of legal questions that can be addressed through forensic evaluations. A separate section focused on the special issues in the forensic evaluation of deaf persons and a sample report was included to aid in reader comprehension of the concepts presented.

Stillman, R.D. (1975) *Assessment of deaf-blind children: The Callier-Azusa Scale.* Reston, Virginia: Council for Exceptional Children.

The Callier-Azusa Scale was based upon the profile scales of the Azusa Scale, an existing developmental assessment measure for deaf-blind children and predicated on the assumption that when provided appropriate educational and therapeutic opportunities, all children develop according to the same sequence.

The five targeted areas assess socialization, daily living skills, motor development, perceptual abilities, and language development. Within each area there are subscales made up of sequential steps that describe developmental milestones. These subscales were designed to be particularly comprehensive at lower levels, suggesting that it was especially applicable to low-functioning deaf-blind and multihandicapped children. Administration required completion by individuals who were thoroughly familiar with the child's behavior.

A child was observed for at least two weeks before completion of the scale. Scoring was based on observations of ongoing behaviors that occurred in the classroom. Most valid results were reported to be obtained if several individuals having close contact with the child completed the evaluation on a consensus basis. Results of the scale were intended to provide a description of the child's level of development and a measure of the child's progress for evaluation of program effectiveness. A pilot version of the Callier-Azusa Scale was field tested over a one-year period although results were not included in this report.

Sullivan, P.M. (1982). Administration modifications on the WISC-R Performance Scale with different categories of deaf children. ***American Annals of the Deaf, 127,*** **780-788.**

Two experiments were conducted to study the effects of administration modifications on subtest Scaled Scores of the WISC-R Performance Scale with different etiological groupings of severely and profoundly deaf children in residential and public schools. While pantomime and visual aid modifications had been routinely used in the administration of the WISC-R with deaf children, no studies had been completed to examine the actual effects of these changes on test performance.

In the first experiment 12 congenitally deaf subjects (5 boys, 7 girls) aged 6.4 to 12.4 years were randomly assigned to two groups and administered the Performance Scale of the WISC-R half of the subtests in a verbal/gesture format and half in a Total Communication format. The administration order of these two subtest clusters was counterbalanced, and age and sex were randomized within the group assignments. The data were analyzed with 2 x 2 Latin square and 2 x 6 analysis of variance procedures to examine administration mode, subtest cluster, administration order, and individual subtest effects. The main effect of administration was statistically significant: $F(1,60) = 11.07$, $p < .05$. Results indicated a higher overall performance when subtests were administered through Total Communication.

In the second experiment, 45 prelingually deaf subjects (27 boys, 18 girls) were selected from a residential school for the deaf that employed Total Communication teaching methods. The subjects were placed in one of three groups of 15 subjects, based on etiology of deafness. The "genetic" group included subjects who had deaf parents, grandparents, siblings, or an identified genetic syndrome. The "multiply handicapped" group included subjects who exhibited one or more educationally significant behavioral and/or learning difficulties not attributable to the hearing loss. Identified etiologies included rubella, meningitis, Rh factor, and prematurity. The "questionable" group contained subjects with the same etiologies as the multiply handicapped group but who did not exhibit educationally significant behavioral or learning difficulties. Pantomime, visual aids, and Total Communication administration conditions were employed with the Performance Scale of the WISC-R. Each of the 15 subjects in the etiological groups was randomly assigned to one of the three administration groups.

The data were analyzed with a 3 x 3 x 3 Latin square and a 3 x 3 x 3 analysis of variance procedures to investigate effects of administration mode, subtest cluster, and individual subtests for the three etiological groupings. Results indicated that there were differential interactions between administration methods used as well as between subtests for each group. In the genetic group, Total Communication resulted in significantly higher scaled scores than the other two methods, and there were no significant differences between the pantomime and visual aid modifications. The questionable group exhibited differing patterns of performance on subtests in relation to the administration mode used. This variability was not considered to be of much practical use, and consequently, results did not justify the manipulation of administration modifications with these children. In the multiply handicapped group, Total Communication resulted in significantly higher mean

scores than pantomime and visual aids, although there were no significant interactions between subtests and administration modes. Combined results gave empirical support to the use of Total Communication in the administration of the WISC-R Performance Scale to children who are instructed in a Total Communication method. Further, it supported the belief that hearing-impaired children are not a homogeneous group and that etiology is an important variable to control in standardization procedures.

Sullivan, P.M. (1986). Charactristics and assessment of students in transition. In L.G. Stewart (Ed), *Clinical rehabilitation assessment and hearing impairment: A guide to quality assurance* (pp. 37–48). Silver Spring, MD: National Association of the Deaf.

This chapter addressed the psychological characteristics and assessment of deaf students in the transition from school to the world of work. Topics discussed included: definition of transition, components of transition services, application to deaf clients, psychological evaluation for transition clients, and information the counselor should provide the psychologist. A sample report was included.

Vernon, M. (1967). Characteristics associated with post rubella deaf children: Psychological, educational and physical. *Volta Review, 59*, 177-185.

The author presented a study of the psychological, educational, and physical characteristics of 129 cases of post rubella deaf children obtained from a sample of 1,468 deaf children attending a residential school for the deaf. Results of the study described the nature and degree of residua among postrubella deaf youth, noting that neurophysiological sequelae were most prevalent. Of the 129 cases examined, 29.8% had a secondary handicapping condition; another 24% had two or more additional major handicapping conditions. Forty-three percent of the children were born prematurely, and a high percentage (21.9%) were found to be aphasic. A comparison was also made between the distribution of IQ levels for postrubella children and the general population. From the data available, a learning quotient (LQ) was computed on each child, and the results indicated that post-rubella children displayed more learning disability than other groups of deaf youth.

Vernon, M., Bair, R. & Lotz, S. (1979). Psychological evaluation and testing of children who are deaf-blind. *School Psychology Digest, 8*, 291-295.

This guide described the current practices of assessment of deaf-blind individuals at the time of publication and offered suggestions regarding the modification of traditional assessment tools. Detailed description of the Callier-Azusa Scale designed to measure developmental levels of low-functioning deaf-blind youth. The authors emphasized the need to obtain extensive case history and etiological data on each child, which in addition to test results may supply information regarding possible central nervous system involvement.

Wilson, J., Rapin, I., Wilson, B., & Vandenburg, F.C. (1975). Neuropsychologic function of children with severe hearing impairment. *Journal of Speech and Hearing Research, 18,* 634-652.

A neuropsychological and medical study was conducted on 34 hearing impaired children, who ranged in aged from 7-10 years. Of these 34 children, 8 demonstrated evidence of organic brain dysfunction, 9 were thought to have genetic etiologies of deafness, 16 were thought to have exogenous causes of deafness, and in 9 cases no cause of deafness could be determined. Findings indicated the presence of several unsuspected abnormalities within the sample, particularly visual deficits. In addition, those children identified as having brain damage were also found to have increased motor and visual motor deficits.

During the assessment it was found that certain tasks appeared to be highly sensitive to the presence of brain damage in this population. These tasks included the performance scale of the Weschler Intelligence Scale for Children – Revised, Raven's Coloured Progressive Matrices, and the paper folding subtest of the Hiskey-Nebraska Test of Learning Aptitude.

Wisniewski, A.M., DeMatteo, A.J., Orr, F.C., & Lee, S.M. (1986). Neuropsychological assessment. In L.G. Stewart (Ed), *Clinical rehabilitation assessment and hearing impairment: A guide to quality assurance* (pp. 49–69). Silver Spring, MD: National Association of the Deaf.

This book chapter described and discussed the use of neuropsychological evaluation in the identification and diagnosis of brain disorders. Special attention was given to the use of such assessment in the development of appropriate treatment strategies with traditionally underserved persons who are deaf. The chapter included a discussion of who should provide the neuropsychological evaluation (qualifications and experience) and a detailed discussion of the nature and scope of the evaluation with in-depth descriptions of the various aspects of functioning that can be addressed. A separate section focused on when to make a referral for this type of assessment and a sample report was provided.

Yandell, D.P. (1986). Psychological assessment: Another perspective. In L.G. Stewart (Ed), *Clinical rehabilitation assessment and hearing impairment: A guide to quality assurance* (pp. 27–35). Silver Spring, MD: National Association of the Deaf.

This book chapter discussed the basic issues and considerations in the evaluation of deaf people. Rather than providing details on the special qualifications needed by psychologists serving this population, the focus was on assisting nonpsychologists to better understand the role of the psychological interview, testing, and diagnosis in the development of a psychological report useful in serving deaf individuals who also have a mental disorder. Sections included a discussion of the foundations of testing, the clinical interview, testing considerations, the diagnosis, and the report. A sample report was included to aid the reader in understanding the concepts presented.

Zieziula, F.R. (1982). ***Assessment of hearing-impaired people: A guide for selecting psychological, educational, and vocational tests.*** **Washington, DC: Gallaudet College Press.**

This comprehensive guide provided general background and specific deafness related information on 62 assessment measures. The tests were organized by type: academic achievement, communication, intelligence, personality, visual perception, vocational aptitude, vocational interest, and work evaluation systems.

Illustrative topics covered for each test include an overview of method of administration, including specific issues related to assessment of hearing-impaired individuals; age levels covered; reliability; validity; norms for hearing-impaired people; appropriateness of the test for hearing-impaired people; range of scores; interpretation; summary of Buros Publications; general references; and references related to hearing-impaired people. Appendices are also provided that include supplementary readings on the evaluation of hearing-impaired individuals, and acronyms for tests.

PART II:
PUBLICATIONS AND OTHER ARTICLES ON BACKGROUND FACTORS RELEVANT TO PSYCHOLOGICAL ASSESSMENT WITH TRADITIONALLY UNDERSERVED INDIVIDUALS WITH DEAFNESS

Overview: This section summarizes additional journal articles, book chapters, and other sources of information relating to the population of traditionally underserved individuals with deafness. While not directly specific to psychological evaluation per se, the information may be useful to researchers and clinicians alike in arriving at a fuller understanding of the contemporary procedures in psychological evaluation of individuals with deafness who have been unserved or traditionally underserved.

Adler, E.P. (1971). Severely handicapped and multiply disabled deaf adults. *Journal of Rehabilitation of the Deaf, 4* (3), 96-100.

The author listed and discussed factors that hinder satisfactory life adjustment among severely handicapped deaf adults. These factors included, but were not limited to, communication deficiencies, mental retardation, emotional disturbance, and brain damage. Among her conclusions Adler emphasized the need for improved comprehensive rehabilitation service delivery to this population.

Anderson, R. (1965). Hearing impairment and mental retardation: a selected bibliography. *Volta Review, 67*, 425-432.

The author provided a bibliography and extensive review of literature related to hearing impairment and mental retardation at the time of publication (1965). References pertinent to clinical and educational programs are included, and the author indicated that the information may be of use to teachers and various other professional personnel, parents, and laymen.

Anderson, G.B. (1972). Vocational rehabilitation services and the black deaf. *Journal of Rehabilitation of the Deaf, 6* (2), 126-128.

The author emphasized the need for rehabilitation counselors to examine their attitudes torward black deaf clients. He challenged rehabilitation counselors to eliminate racist attitudes when providing services, and he also provided suggestions designed to foster this principle. The author reported that the black deaf population was considerably underestimated and further indicated a need for improved training of rehabilitation personnel to adequately provide services.

Anderson, G.B. & Bowe, F.G. (1972). Racism within the deaf community. *American Annals of the Deaf, 117*, 617-619.

The authors presented an overview of the obstacles to obtain adequate education, vocational training, employment opportunities, and community services frequently experienced by black deaf individuals. They also cited intances in which progress had been

made in each of these areas. Further discussion was provided regarding consequences of the lack of black deaf professionals and community leaders, social isolation, undereducation, and underemployment of individuals who are black and deaf.

Badanes, J. (1973). A halfway house program for deaf psychiatric patients. ***Journal of Rehabilitation of the Deaf, 6*** **(4), 33-37.**

This article reviewed the success of the Foundation House program located in New York City, which began to provide services to deaf clients in 1965. Fountain House was initially founded in 1948 for hearing persons who were previously psychiatric inpatients in mental hospitals. A case study was used to illustrate the extent to which the discharging hospital and Fountain House staff worked in a cooperative effort toward comprehensive rehabilitation of the deaf patients. Forty deaf patients had received services at the time of publication.

Bent, M. (1976). The older atypical deaf child: A program. ***American Annals of the Deaf, 121,*** **478-479.**

A brief overview is provided of a program that was initiated at St. Mary's School for the Deaf in Buffalo, New York. The program was heared toward meeting the needs of their older, multiply handicapped, low functioning student population. The emphasis of the program was on developing functional skills that would enable the students to participate in the mainstream as independent consumers. The program has three divisions that include a variety of content areas such as math and science, a work-study component, and a vocational training component.

Bowe, F.G., Jr. (1971). Non-white deaf persons: Educational, psychological and occupational considerations. ***American Annals of the Deaf, 116,*** **357-361.**

The author reported on the under-representation of non-white deaf people in research studies of deaf persons, cited general problems in case finding, inferior educational preparation, poorer communication skills in relation to white deaf peers, and specifically noted that psychological development was least understood in regard to this population.

Included in this article was a descriptive summary of a 1964 study by the Georgia Department of Public Health of the tested IQ levels of 164 deaf students at the Georgia School for the Deaf (Negro Division) using the Leiter International Performance Scale. Using this measure, subjects obtained a mean IQ of 74 (range 30 -117) with a standard deviation of 14.6. Exactly 50% of the scores fell within the "educable mentally retarded" range (51-75 IQ), 30% were in the "dull normal" range (76-90 IQ), and 12% placed within the "normal" range (91-110). These scores were considerably lower than those for the hearing black population. The results indicated that nonwhite deaf students consistently scored lower than their white deaf peers and caution was urged regarding the use of this test as a measure of intelligence for academic placement or planning. The author reported the area of psychological development to be the least understood in terms of accurate or useful information as compared to information regarding educational achievement and occupational opportunities. In addition, the author underscored the paucity of information available on individuals who are black and deaf and urged extensive research on this population.

Bowe, F.G. Jr. (1972). Role of the paraprofessional in inner city services to deaf persons. *Journal of Rehabilitation of the Deaf, 6* (2), 120-122.

The author raised the issue of providing significant services for "disadvantaged" deaf persons and also identified a critical need for research-based knowledge on this population that could guide service delivery approaches. The author indicated that both an awareness of the problem and a desire to remedy the problem are severely undercut by personnel shortages and further suggested two primary tasks that would help resolve these problematic issues. These included the training of necessary personnel and training black deaf residents. The benefits and difficulties are also addressed regarding implementation of this approach.

Braden, J.P. (1991). A meta-analytic review of IQ research with deaf persons. In D. S. Martin (Ed.), *Advances in cognition, education, and deafness* (pp. 56-61). Washington, DC: Gallaudet University Press.

In this article, the author uses meta-analytic techniques to summarize numerous investigations of deaf children's IQs since the early 1900s. Reviewing 193 references that incorporated 285 unique samples, 324 individual IQ reports were analyzed. According to the author, 50% of all samples came from residential schools for the deaf located in North America, the United Kingdom, and Germany. Data estimates suggested that the majority of samples were evenly balanced for gender. Subjects were predominantly white and attended residential schools where sign language instructional methods were used, were congenitally severely to profoundly deaf, had hearing parents, and had high incidence rates of additional handicapping conditions. The majority of subjects were given performance IQ tests although some were also administrered verbal and motor-free nonverbal tests. According to the author, "Deaf norms were used in 19 studies and were only found for the Hiskey-Nebraska Test of Learning Abilities and the Wechsler Intellignece Scale for Children-Revised (WISC-R) Performance Scale. There was no difference in mean IQ as a function of norm selection." Mean IQs reported ranged from 56 to 122 with a grand unweighted mean of 97.14, $SD_M = 10.79$.

Chess, S., Korn, S.J., & Fernandez, P.B. (1971). *Psychiatric disorders of children with congenital rubella.* New York: Brunner/Mazel Publishers.

The authors reported detailed results of a comprehensive longitudinal research project of deaf children with congenital rubella. Subjects included 243 children who were products of pregnancies complicated by maternal rubella; 177 of whom were hearing impaired. These children ranged in age from two to four years at the onset of the study. Data was collected on the prevalence of psychiatric disorders, the relationship between physical impairment and psychiatric status, areas of behavioral disturbance, intellectual development, adaptive behaviors, neurological impairments and behavioral assessment, temperament, prevalence of autism, and impact on the family. Information was also gathered on the severity and various combinations of multiple disabilities. Data was summarized in text and table formats but no attention was given implications or future directions based upon the findings of the study.

Chess, S., & Fernandez, P.B. (1980). Impulsivity in rubella deaf children: A longitudinal study. ***American Annals of the Deaf, 125,*** **505-509.**

In this study, 204 children who were products of pregnancies complicated by maternal rubella were followed from early childhood into adolescence. Detailed behavioral data were obtained at 2 1/2–5 years, 8–9 years, and 13–14 years of age. Of this sample, 85 children were deaf, 85 were deaf with one or more additional disablingcondition, and 34 did not display any physical disabling condition. Additional disabilities occurred in varying degrees and combinations, and included visual impairments, neuromotor difficulties, cardiac disease, mental retardation and childhood autism.

For the purposes of data analyses, the children were categorized into three subgroups: Normal, Deaf Only and Deaf Multihandicapped. Data was obtained through parent and teacher interviews, psychological study and psychiatric interview. Impulsivity was defined as "sudden unpredictable acts that were triggered by some minor incident or no discernable stimulus", and the results indicated that this trait along with that of self abuse clerly differentiated the Deaf-Only chilfren from Deaf Multihandicapped children. At the 13–14 year age period 2.9% of the Normal group, 21.2% of the Deaf Only group and 58.8% of the Deaf Multihandicapped group displayed impulsive behaviors. A more detailed analysis of the data on impulsivity was carried out along three dimensions: the ipsative nature of the impulsivity, or how the behavior changed or remained the same over time; the direction of the impulsive acts, whether it was self-directed/self-abusive or.outwardly directed; and the location of impulsive behaviors, which refers to whether they reportedly occurred at home, school, or upon direct observation. The ipsative nature of impulsivity was observed to represent a clear continuity of these behaviors over several developmental periods whereas directionality of impulsivity demonstrated significant differences between groups. In the Deaf Only group, there was a linear progression toward diminishing self-abuse over time, dropping from 27.8% in early childhood to 11.1% in middle childhood to none in early adolescence. Self-abuse in the Deaf Multihandicapped group remained constant at 54% throughout developmental periods. The data on location of display of impulsive behaviorsindicated that both the Deaf Only and the Deaf Multihandicapped groups tended to display impulsivity without regard to setting.

The authors discussed implications for the impact of impulsive actions upon social adaptation and social inclusion in both deaf community and mainstreamed settings.

Cooper, A.F. (1976). Deafness and psychiatric illness. ***British Journal of Psychiatry, 129,*** **216-226.**

The author discussed the relationship between deafness and psychiatric disorders and reported the influence of the severity of the hearing loss and the age of onset of the psychiatric disturbance on the severity of illness. For example, hard-of-hearing individuals were found to be over-represented in samples of patients who develop late onset paranoid psychosis. Factors related to paranoid illness included the role of sensory deprivation, the influence of deafness on attention, perception, and communication, and the psychological and social ramifications of deafness.

DiFrancesca, S.J., & Hurwitz, S.N. (1969). Rehabilitation of hard core deaf: Identification of an affective style. ***Journal of Rehabilitation of the Deaf, 3*** **(2), 34-41.**

The author described the progress of an innovative rehabilitation program for the deaf carried out by the St. Louis Employment Vocational Services. The deaf population

described in this article is atypical. The population included people who have failed repeatedly in work, school, and societal settings, and they possessed no specialized work skills and held limited competence for successful job placement. Using the term "hard-core deaf," the authors provided a detailed description of the characteristics of this population and described what appear to be their affective approach to learning and problem solving, including orientation and modes of treatment.

Fitch, J., Sachs, D., & Marshall, H. (1973). A program to improve visual perception skills in deaf children. ***American Annals of the Deaf, 118,*** **429-432.**

The authors documented the existence of visual perceptual deficits in a pilot study of 50 deaf children in Texas and New Mexico indicating most of the children performed below normtive standards on the Frostig Developmental Test of Visual Perception. Tasks measured eye-motor coordination, figure-ground discrimination, constancy of shape, position in space, and spatial relations. In a subsequent study the authors used matched goups of school age deaf children ages 3 to 5 assigning them to two experimental conditions and one control condition. There were 113 children in the control group, 106 children in a Free Play experimental condition, and 58 children in the Problem Solving experimental condition. Findings indicated improvement on the Frostig among children in the Problem Solving condition after a 20-week period in which the children were given structured 15-minute training sessions.

Gerken, K. Grimes, J., & Brown, J. (1978). A step forward: Psychological services to children who are hearing-impaired. ***American Annals of the Decf, 123,*** **448-451.**

The authors reviewed the success of a five-day inservice training program directed at improving preparation and training among school psychologists serving hearing impaired students. The goal of the workshop was to review the following areas related to deafness: medical and audiological considerations, education and vocational services, educationl programming needs, training in use of appropriate assessment techniques, understanding of social, emotional, and vocational needs and to provide direct interaction with deaf individuals. The workshop was followed up by an immediate evaluation by the participant and a long-term, six-month follow up.

Goldsmith, L. & Schloss, P. (1986). Diagnostic overshadowing among school psychologists working with hearing impaired learners. ***American Annals of the Deaf, 131,*** **288-293.**

The authors reported the findings of a sample of 550 school psychologists randomly selected from the state of Illinois. The group was divided into two groups of 275; one group received a case description of a student identified as profoundly deaf while the other group obtained information that did not describe the student as handicapped. Ninety surveys were returned with the deaf condition and seventy-five surveys were returned with the nonhandicapped condition. The results indicated school psychologists were influenced by the primary diagnosis of deafness in terms of their recommendations regardless of the amount of experience in providing services to deaf children.

Gonzales, J. (1985). *Spanish speaking parents and their deaf children.* San Antonio, TX: Office for the Education of the Deaf, Texas Education Agency, South Texas Region.

This article addressed the complex problems of fostering communication between Spanish speaking parents and their deaf children. Issues regarding the teaching of signs and the use of Spanish versus English at home and Spanish versus English in school were discussed. Descriptions of several programs were also presented as well as a pilot project in which 250 signs were taught to 50 deaf children and their Spanish speaking families. Both Spanish and English lables were attached to the signs. While vocabulary building did not present a problem, there was significant difficulty encountered in formulating sentences due to the syntactical differences between the two languages.

Grinker, R. R. (Ed.) (1971). *Psychiatric diagnosis, therapy and research on the psychotic deaf* (SRS-RSA 192-1971). Washington, DC: US Rehabilitation Services Administration.

This comprehensive report detailed the need for improved psychiatric service delivery for mentally ill children and adults. The report suggested the need to focus on preventive measures in providing services to this population because of the poor prognosis for successful psychotherapy used as an intervention. Detailed information was provided regarding various treatment approaches with psychotic deaf individuals including inpatient psychotherepy and group therapy. Other issues related to studies of cognitive processes among the deaf, measures of neurological functioning of psychiatric deaf patients were also presented. The information coveed a developmental range from preschool age children to adults.

Jensema, C., & Trybus, R.J. (1975). *Reported emotional/behavioral problems among hearing impaired children in special education programs: United States, 1972-1973* (Series R., No. 1). Washington, DC: Gallaudet College, Office of Demographic Studies.

Descriptive data was reported on the incidence of emotional and behavioral problems among deaf children in special education for the year of 1972-1973. Information regarding additional handicapping conditions, age, sex, and etiology of deafness is discussed as relevant to emotional and behavioral problems among this population.

Lennon, R. (1970). Report on a program for emotionally disturbed deaf boys. *American Annals of the Deaf*, 115, 469-480.

The author reported on the success of an experimental two-year program devleped to address the needs of 16 emotionally disturbed deaf boys. He cited the high prevalence of emotional disturbance among multihandicapped deaf individuals as a factor for having developed this program. The subjects in this study were 16 males ranging in ages from 7 to 17 years. All subjects were prelingually deaf with losses of 65 DB or greater. Performance IQ scores were 85 or greater. The group overall did not demonstrate gross neurological dysfunction. The program utilized reinforcement of appropriate behavior and gradual deferment of rewards to modify behavior. Other features of the program included a 1 to 4 ratio of staff to students, parental involvement, and development of specialized instructional materials.

Luetke, B. (1976). Questionnaire results from Mexican-American parents of hearing impaired children in the United States. *American Annals of the Deaf, 121,* 565-568.

The authors reported the responses of 22 Mexican-American parents to a questionnaire regarding their knowledge and acceptance of their hearing impaired child's education and educators. The findings indicated that these parents were primarily Spanish speaking and had a limited grasp of the English language. They frequently did not use sign, and in a tradition similar to that of other linguistic groups, they relied on speech and lipreading to communicate with their children at home. Yet these parents communicated with their children in a spoken language that is dissimilar from that used in the school setting. The effects of these discrepancies were discussed and suggestions were provided for improved communication.

Luhr, J., & Dayton, D. (1971). Combining clinical and educational services. *American Annals of the Deaf, 116,* 566-568.

The authors reported on the implementation of medical examinations by medical specialists on-site at St. Mary's School for the Deaf in Buffalo, New York. The implementation of these services arose from the observation of an increasing incidence of learning problems among the 315 children attending the school that appeared to be related to physical problems other than deafness. Ophthalmological services indicated a 60% incidence of ocular defects among 237 children referred for screening. Forty of forty-five children referred for neurological screening on the basis of suspected CNS damage and bizarre classroom behavior were found to have neurological dysfunction. Two of the remaining five children in this group were referred for psychiatric illness. The school acquired the services of a psychiatrist to meet with the teachers to discuss psychiatric aspects of deafness to provide services to individual students. The authors reported significantly improved educational service delivery to this population as a result of the implementation of these clinical services on-site at the school.

Meadow, K.P. & Schlesinger, H.S. (1971). The prevalence of behavioral problems in a population of deaf school children. *American Annals of the Deaf, 116,* 346-348.

This report described a 1966 survey of teachers and coundelors at ta state residential school for the deaf in California, in which respondents were asked to identify those students in thier care whom they believed to be emotionally disturbed Thirty-nine teachers and 46 counselors, who collectively worked with 516 deaf children responded to the survey. Respondents were asked to identify two groups of children: "children who are severely emotionally disturbed and have been or should be referred for psychiatric help" and "children who are not severely disturbed, but whose behavior necessitates a disproportionate share of the teacher's time or requires other special attention" (p.152). The questionairre used in the study was adapted from one previously used for a 1960 mental health survey of shcool chilren in Los Angeles County.

Results indicated that 60 (11.6%) of the 516 deaf students included in the study were identified as "severaly emotionally disturbed", and 101 (19.6%) were considered to require a disproportionate share of the teacher/counselor's time because of behavior problems These findings were then compared with those from the earlier Los Angeles County mental health survey. The authors found that 30.2% of the deaf students were reported as having severe or mild behavioral problems compared with 9.7% of the students from the earlier

study. In addition, a number of demographic factors were analyzed from the deaf student sample, including race/ethnicity and occupation of the child's father, residual hearing and parental hearing status, age, religion, gender, IQ score, family size and stability, ordinal position, and etiology of deafness.

Rainer, J.D., Altshuler, K., Kallman, F., & Deming, W. (Eds.) (1963). Family and mental health problems in a deaf population. New York: Columbia University Press.

This book provided comprehensive resources on issues in mental health and deafness. The book served to culminate the Mental Health Project for the Deaf that was carried out by the Department of Medical Genetics of the New York Psychiatric Institute. A wealth of information was acquired on the literate deaf population in New York state and literate deaf twins in the eastern portion of the United States. Of significant relevance to the topic of unserved deaf populations was the entire third section of the book on psychiatric considerations and clinical inpatient programs. A contribution by Edna Levine on psychological testing of deaf people was also included.

Sachs, B.A., Trybus, R.J., Koch, H.R., & Falberg, R.M. (1974). Current developments in the psychological evaluation of deaf individuals. *Journal of Rehabilitation of the Deaf, 8* (1), 131-141.

This article addressed the issue of psychological assessment of deaf individuals. The discussion provided information regarding studies and projects that led to the use of various instruments, norms, and test modification procedures currently used with the deaf population. Tests included the 16PF, the Stanford Achievement Test for the Hearing Impaired, and the Wechsler (Wechsler Adult Intelligence Scales–WAIS) Scales. Also included were examples of modifications of the Information, Comprehension, and Arithmetic subtests of the WAIS.

Schein, J.D. (1975). Deaf students with other disabilities. *American Annals of the Deaf, 120*, 92-99.

The author attempted to "summarize current thinking and practice with respect to deaf students with additional disabilities bringing together a discussion of the recent past with some predictions for the near future." References regarding multiply handicapped deaf students wre cited from as far back as 1879 and projections of the characteristics of the deaf population are made up through 1992. The author emphasized the need to attend to the magnitude of the multiply handicapped deaf population, specifically the need to greatly increase facilities for education. He also stressed a critical need for instructional research to aid in further advances in screening, diagnosis, curriculum development, and improved technology.

Shroyer, E., & Tweedie, D. (1982). *The multihandicapped hearing impaired child: Identification and instruction.* Washington, DC: Gallaudet Press.

Chapters offered discussion by contributing authors on a variety of topics related to the multihandicapped hearing impaired population. Areas discussed included an

understanding of the population, issues related to comprehensive programming, curriculum development, and language and communication issues.

Stewart, J. (1981) Wechsler performance IQ scores and social behavior of hearing impaired students. ***Volta Review, 83,*** **215-222.**

The author analyzed the correlations between the Wechsler Performance Scale and a Socail Rating Scale, which rated eight social behaviors including cooperation, grooming, eating manners, responsiveness to help, helpfulness, emotional expression, and reconstruction of experiences. Ratings were done by teachers and residence hall counselors. The subjects were 104 deaf students ranging in age from 6 to 19. Of these students, 55 were male and 49 were female, 83 were white and 21 were nonwhite. The findings indicated grooming and reconstruction of experiences correlated significantly with the most subtest scores while helpfulness, responsiveness to help, and concern for others did not correlate significantly with any of the subtests. The author concluded it may prove useful to utilize measurable observable behaviors as one method of screening for cognitive capacity in difficult to assess hearing impaired children.

Stewart, L.G. (1971). Problems of severely handicapped deaf: Implications for educational programs. ***American Annals of the Deaf, 116,*** **362-368.**

The author reported difficulties encountered in service delivery to multihandicapped deaf adults at the Hot Springs projects in Arkansas. According to the author, problems in communication skills and behavioral difficulties significantly influenced rehabilitation among this population. The author reported slow progress among these clients and an attrition rate of 55%. These observations were based on 106 clients, 73 of whom were male and 23 were female. Their ages ranged from 14 to 43. Intelligence levels were assessed by performance IQ of 70 or above, and the average amount of education was 12 years. The author reported the need for stronger family involvement at a very young age, strengthening of preschool programs, and the use of total communication and stronger counseling and guidance programs to improve service delivery to this population. He further reported a need for a special rehabilitation facility for severely handicapped deaf persons to meet the vocational needs of this population after secondary school.

Stewart, L.G. (Ed.) (1971). ***Towards more effective rehabilitation services for the severely handicapped deaf client.*** **Hot Springs, AR: Arkansas Rehabilitation Research and Training Center.**

Eight contributing authors provided insightful information related to a wide range of services offered to severely handicapped deaf clients. Among the major topics discussed were psychological evaluation, assessment of minimal brain dysfunction, vocational evaluation, counseling, psychotherapy, and job placement.

Stewart, L.G. (1978). Hearing impaired/developmentally disabled persons in the United States: definitions, causes, effects and prevalence estimates. ***American Annals of the Deaf, 123,*** **488-499.**

The author defined developmental disabilities according to Public Law 94-103 and also provided a definition of deafness that is not included under this particular law.

Specific characteristics of developmental disabilities were discussed including autism, cerebral palsy, epilepsy, and mental retardation. Descriptions and causes and effects were also addressed. The author presented the prevalence rate data of these developmental disabilities as well as prevalence rates of hearing impairment. In addition, estimates of the prevalence of hearing impaired developmentally delayed were included based on information available on the incidence of each of these conditions with the general population.

Stewart, L.G. (1979). Hearing-impaired developmentally disabled persons: A challenge to the helping professions. Tucson, AZ: Model Demonstration Programs, the Rehabilitation Center, University of Arizona.

This book provided a comprehensive assessment of the Model Demonstration Program for hearing impaired developmentally disabled persons. The program was established in October 1976 by the Rehabilitation Center, College of Education at the University of Arizona in Tucson. This program was established and implemented as a result of the growing need for organized education, habilitation, and rehabilitation programs for the hearing impaired developmentally disabled clients and was described in detail from its inception through the assessment of its success to suggestions for future considerations.

Sullivan, P., & Burley, S. (1990). Mental testing of the hearing impaired child. In C.R. Reynolds & R.W. Kamphaus (Eds.), *Handbook of psychological and educational assessment of children: Volume I*, (pp.). New York: The Guilford Press.

A comprehensive discussion was offered that covered definitions of hearing impairment, major etiologies of deafness and their subsequent manifestations in cognitive, physical, and emotional spheres of functioning, incidence rates of multiple handicaps, and the sequelae of additional handicapping conditions. A literature review was aslo provided that covered three major trends identified in the literature: the deaf child as intellectually inferior, the deaf child as intellectually concrete, and most recently the deaf child as intellectually normal. A thorough discussion of general testing considerations was offered and an appendix of intelligence tests used with the hearing impaired was also presented. Finally, the authors discussed the implications for future trends in the assessment of hearing impaired children.

Sussman, A. (1974). Group therapy with severely handicapped hearing impaired. *Journal of Rehabilitation of the Deaf, 8* (1), 122-130.

The author presented an anecdotal account of a "pilot, highly experimental group therapy program" that was established for a group of eight multiply handicapped deaf individuals at a community mental health center in New York City. Additional handicapping conditions included minimal brain dysfunction with attendant behavior disorders, serious interpersonal relationship problems, and extrememly poor communication skills. Physical disabilities included retinitis pigmentosa, cerebral palsy, epilepsy, and mental retardation (borderline). Three of the clients were Puerto Rican, one was black, and four were white. Ages ranged from 18 to 23 years. The author described the progress of the group over a period of 28 one-hour sessions and reported success with

regard to identification and expression of affect, decrease in destructive behaviors, development of give and take relationships, and increased spontaneity.

Vernon, M. (1961). The brain injured (neurologically impaired) deaf child: A discussion of the significance of the problems, its symptoms and causes in deaf children. ***American Annals of the Deaf, 106,*** **239-250.**

This article described a number of symptoms and causes of neurological impairment in deaf children. Lists of academic, emotional, and physical symptoms found in this population were included to assist in the diagnosis of neurological impairment. The article also included a descriptive list of causes relative to family history, pregnancy and the birth process, and medical history of the child. Of special interest is a listing of psychological tests that may be helpful in the diagnosis of neurological impairment in deaf children. The author included two diagnostic screening forms for detection of neurological impairment based on the symptoms and causes presented in the paper. It should be noted that this article was published prior to the rubella epidemic of the early 1960s, and may not necessarily reflect present-day etiological distribution or neurological implications of this population.

Vernon, M. (1969). Multiply handicapped deaf children: medical, educational and psychological considerations. ***Research Monograph for the Council for Exceptional Children.*** **Washington, DC: Council for Exceptional Children.**

The author presented a comprehensive analysis of available date in 1,463 deaf children given preadmission evaluations at the California School for the Dea from 1953 through 1964. An etiological breakdown of the sample included 141 cases of deafness as the result of maternal rubella, 137 cases of meningitis, 257 cases of prematurity, 45 cases of erythroblastosis fetalis, and 79 cases of hereditary deafness. The erythroblastosis fetalis cases were the result of complications from Rh factor. Ages of the subjects in the sample ranged from 3 to 21 years, and an average hearing loss among the group was demonstrated at 65 DB or greater in the speech range. The findings of this analysis supported the author's main hypothesis that "many of the secondary disabilities . . . which characterize many multiply-handicapped deaf children are caused by brain damage resulting from the same condition that led to the deafness." More specific hypotheses surrounding this issue were also reported.

Wolff A.B., Kammerer, B., Gardner, J., & Thatcher, R.W. (1989). Brain-behavior relationships in deaf children: The Gallaudet neurobehavioral project. ***Journal of Rehabilitation of the Deaf, 23,*** **19-23.**

The authors reported their findings of a study in which cerebral function and cognitive processing in prelingually deaf children were examined. There were two phases of the project. The first phase involved obtaining a set of topographic maps contrasting certain aspects of cerebral development among deaf and hearing children. The second phase involved administration of a neuropsychological battery of tests. The sample included 100 severely to profoundly prelingually deaf children age 6 to 16, and 93 hearing children. The subjects were matched on performance IQ and age. Deaf subjects were assigned to one of two groups: genetic deafness and neurologically-at-risk deafness. The findings indicated differences in information processing abilities among genetic and neurologically-at-risk deaf children.

Wolff A.B., & Thatcher, R.W. (1989). Cortical reorganization in deaf children. ***Journal of Experimental and Clinical Neuropsychology, 12,*** **209-221.**

The authors reported the results of a study of topographic mapping of the cerebral cortex of a group of deaf children and matched hearing subjects. The results were analyzed with respect to phase, coherence, and powee of electroencephalographic measures. The findings indicated that deaf children demonstrated higher coherence and lower phase in specific left hemispheric areas. The authors concluded these subjects manifested less neural differentiation in the right hemisphere but greater differentiation in certain right hemispheric areas. According to the authors, the overall findings of the research "support the hypothesis that prelingual deafness results in partial reorganization of the cerebral cortex.

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